

REMARKS

Introduction

Claim 7 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 2, 3, 6 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Linde (USPN 5,745,670) and Kim (USPN 5,886,424).

The rejections are traversed, and reconsideration is requested.

Amendment of Claims 2, 6 and 7 by Applicant

Claims 2, 6 and 7 have been amended. The basis for the amendment in claims 2 and 7 is FIG. 2 of the application and the description in the specification at page 33, line 1 through page 34, line 18. The basis for the amendment in claim 6 lies in the disclosure of FIGs. 1 and 2 and the description at page 16, lines 5 to 23. Claim 6 is amended to cover the configuration of claim 1, and to clarify the differences between the present invention and the Linde reference.

The present invention relates to a power supply device that includes power supply units constituting a parallel redundancy structure and a main control section, for supplying power to an external load. The present invention prevents the power supply to the external load from being stopped when one of the power supply units constituting the parallel redundancy structure fails by maintaining a power supply to a unit side control section in the power supply unit. As described in the specification, the AAPA fails to accomplish this.

The Linde reference teaches a plurality of units, each of which includes a local power supply, which are connected to a power bus in a hierarchical order. The Linde system provides that the devices of higher rank or position in the hierarchy obtain priority in drawing power from the bus. If a higher ranking device should experience a power supply failure, the device will be disconnected from the power supply bus and the higher ranking device connected to the power distribution bus, as described in the Abstract. Linde fails to disclose a configuration of a power supply device including power supply units constituting a parallel redundancy structure and a main control section for supplying power to an external load, as is recited in the present invention. Thus, the Linde reference fails to prevent the power supply to the external load from being stopped, when one of the power supply units fails, by maintaining a power supply to a unit side control section in the power supply unit, as is implemented by the present invention. Consequently, a combination of the AAPA and the Linde reference also fails to solve such a problem.

The Examiner asserts that Kim teaches a power supply unit, wherein a voltage converter (24) is inserted in an upstream side of a logic control circuit (25) for providing a plurality of constant operating voltages. However, the Kim reference discloses a power supply apparatus for a portable computer, which supplies a battery power when the supply of AC power is accidentally cut. Kim simplistically discloses a DC-DC converter for supplying a plurality of control voltages in an upstream side of a logic control circuit. However, the Kim reference also fails to disclose a configuration of a power supply device that includes power supply units constituting a parallel redundancy structure and a main control section for supplying power to an external load. Therefore, the Kim reference also fails to solve the problem of preventing a power supply to the external load from being stopped when one of the power supply units fails, by maintaining a power supply to a unit side control section in the power supply unit. Consequently, a combination of the AAPA, the Linde reference and the Kim reference cannot be used to solve the above-cited problem.

Rejection under 35 U.S.C. §112

At page 2, claim 7 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

It is respectfully submitted that claim 7 does not recite that the **main control unit** includes a converting section, but that **each of the power supply units** includes a converting unit inserted on an upstream side of the unit side control section, wherein the converting section converts the second controlling voltage into a constant controlling voltage and supplies the constant controlling voltage to the unit side control section unit, which outputs the third controlling voltage to the main controlling section unit. Claim 7 has been amended to show this relationship more clearly. Additionally, for the Examiner's convenience, a copy of FIG. 2 (see attachment) is enclosed in which the power supply lines are darkened to help the Examiner distinguish the power supply lines from the signal lines.

Thus, claim 7 is respectfully submitted to be definite under 35 U.S.C. §112.

Rejection under 35 U.S.C. §103

At pages 2-6, claims 2, 3, 6 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Linde (USPN 5,745,670; hereafter "Linde") and Kim (USPN 5,886,424; hereafter "Kim").

Claims 2 and 6 have been amended in accordance with the amendment of claim 7 to show more clearly the function of the converting unit and the output of the unit side control section of the third controlling voltage to the main controlling section unit.

It is respectfully submitted that Linde teaches a plurality of local power supplies, each controlled by a single internal control unit. Each internal control unit (control logic 30) has a control status input 42 and provides a control status output 44 (col. 3, lines 28-37), organized in a **hierarchy**. Thus, each internal control unit utilizes the sensed status of its power supply and the control status input 42 which is coupled to the control status output 44' from the next higher adjacent device in the hierarchy to determine whether it can enable the switch 50 to couple the device 10 to the power distribution bus 20. In such an arrangement, Linde fails to teach or suggest a control unit that is powered by the control power supply unit of another power supply unit for the purpose of enabling the control units to function independently of the operation condition of the internal supply.

In contrast, the present invention is constituted in such a manner that the controlling voltages are parallel supplied to the control unit in the power supply unit thereof not only from the control power supply unit in the power supply unit thereof but also from the control power supplies in other power supply units, so that even when an abnormality occurs in the control power supply unit in the power supply unit thereof, this control unit can receive the supplies of the controlling voltages from the control power supplies in the other power supply units (not just from a single power supply coupled in a hierarchical fashion) to inform the outside of the abnormality in the power supply unit thereof, thereby enabling the enhancement of the reliability.

Similarly, Kim teaches a plurality of power supplies wherein a control unit is not powered by the control power supply unit of another power supply unit for the purpose of enabling the control units to function independently of the operation condition of the internal supply, and thus lacks a control unit that is powered by the control power supply unit of another power supply unit for the purpose of enabling the control units to function independently of the operation condition of the internal supply. That is, although Kim teaches a parallel configuration of power supplies, Kim fails to teach a parallel configuration of control units.

Similarly, the AAPA fails to teach the control power supply section in a parallel redundancy structure providing power to each unit side control section unit and a converting section supplying a converted voltage to the unit side control section.

Thus, since the parallel configuration redundancy of the unit side control sections of the individual power supplies is not taught or suggested by Linde, AAPA or Kim, it is respectfully submitted that amended claims 2, 6 and 7 are non-obvious in view of Linde, AAPA and/or Kim.

Since claim 3 depends from amended claim 2, claim 3 is submitted to be non-obvious for at least the reasons that amended claim 2 is submitted to be non-obvious.

It is respectfully submitted that the courts have held that the Examiner may not suggest modifying references using the present invention as a template absent a suggestion of the desirability of the modification in the prior art. *In re Fitch*, 23 U.S.P.Q.2d 1780, Fed Cir. 1992. Something in the prior art as a whole must suggest the desirability, and thus, the obviousness, of making the combination. *Alco Standard Corp. v. Tennessee Valley Authority*, 808 F. 2d 1490, 1 U.S.P.Q. 2d 1337 (Fed. Cir. 1986). When a rejection depends on a combination of prior art references, there must be some teaching, suggestion or motivation to combine the references. *In re Geiger*, 815 F.2d 686, 688 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987). Thus, since there is no teaching or suggestion of combining the AAPA with Linde and/or Kim, it is respectfully submitted that claims 2, 3, 6 and 7 are patentable over Applicant Admitted Prior Art in view of Linde and/or Kim.

Conclusion

In accordance with the foregoing, claims 2, 6 and 7 have been amended. Claims 2, 3, 6 and 7 are pending and under consideration. Reconsideration and allowance are respectfully requested.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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FIG.2

